

AMENDMENTS TO THE CLAIMS

1. (CURRENTLY AMENDED) A turbomolecular vacuum pump having active magnetic bearings, the pump comprising an enclosure ~~(110)~~ defining a primary vacuum chamber ~~(116)~~, a rotor ~~(120)~~ mounted inside the enclosure ~~(110)~~, an electric motor ~~(107)~~ for rotating the rotor ~~(120)~~ relative to the enclosure ~~(110)~~, at least one axial magnetic bearing ~~(103)~~, and at least one radial magnetic bearing ~~(101, 102)~~ for supporting the rotor ~~(120)~~ relative to the enclosure ~~(110)~~, at least one axial detector ~~(106)~~ for detecting the axial position of the rotor ~~(120)~~ relative to the enclosure ~~(110)~~, at least one radial detector ~~(104, 105)~~ for detecting the radial position of the rotor ~~(120)~~ relative to the enclosure ~~(110)~~, a hermetic leaktight electrical connector ~~(180)~~ mounted in the wall of the enclosure ~~(110)~~, and at least one electric cable ~~(183, 184)~~ providing a connection with remote external electric circuits associated with the electric motor ~~(107)~~, and with the axial and radial magnetic bearings ~~(103 and 101, 102)~~,

the pump being characterized in that the remote external electric circuits associated with the electric motor ~~(107)~~ and with the axial and radial magnetic bearings ~~(103 and 101, 102)~~ essentially comprise general power supply circuits ~~(191)~~ for electrically powering the electric motor ~~(107)~~ and the axial and radial magnetic bearings ~~(103 and 101, 102)~~, in that circuits ~~(194)~~ for controlling the axial and radial magnetic bearings ~~(103 and 101, 102)~~ on the basis of signals issued by the axial and radial detectors ~~(106 and 104, 105)~~ are embedded in a resin and placed inside the enclosure ~~(110)~~ in the primary vacuum chamber ~~(116)~~, and in that the leaktight electrical connector

~~(180)~~ and the electric cable ~~(183, 184)~~ providing a connection with the remote external electric circuits ~~(191, 192)~~ each comprises a number of connection wires that is less than ten.

2. (CURRENTLY AMENDED) A turbomolecular vacuum pump according to claim 1, characterized in that the remote external electric circuits further comprise circuits ~~(192)~~ providing a communications interface with a system external to the vacuum pump.

3. (CURRENTLY AMENDED) A turbomolecular vacuum pump according to claim 1 ~~or claim 2~~, characterized in that it includes circuits ~~(193)~~ for controlling the electric motor that are mounted on a bottom plate ~~(202)~~ of the enclosure ~~(110)~~ on the outside thereof, in that the connection electric cable ~~(183, 184)~~ comprises a first connection cable ~~(184)~~ between the leaktight electrical connector ~~(180)~~ and the circuits ~~(193)~~ for controlling the electric motor, and a second connection cable ~~(183)~~ between the circuits ~~(193)~~ for controlling the electric motor and the remote external electric circuits ~~(191, 192)~~, and in that the first connection cable ~~(184)~~ has a number of connection wires that is less than ten, while the second connection cable ~~(183)~~ has a number of connection wires that is less than five.

4. (CURRENTLY AMENDED) A turbomolecular vacuum pump according to claim 3, characterized in that the first connection cable ~~(184)~~ has a number of connection wires that is less than eight, while the second connection cable ~~(183)~~ has a number of connection wires that is less than four.

5. (CURRENTLY AMENDED) A turbomolecular vacuum pump according to ~~any one of claims 1 to 4~~, characterized in that the circuits ~~(194)~~ for controlling the axial and radial magnetic bearings ~~(103 and 101, 102)~~ are placed in the bottom of the enclosure ~~(110)~~.

6. (CURRENTLY AMENDED) A turbomolecular vacuum pump according to ~~any one of claims 1 to 5~~, characterized in that a cooling circuit ~~(203)~~ external to the pump surrounds a portion of the enclosure ~~(110)~~ housing the circuits ~~(194)~~ for controlling the axial and radial magnetic bearings ~~(103 and 101, 102)~~.

7. (CURRENTLY AMENDED) A turbomolecular vacuum pump according to ~~any one of claims 1 to 6~~, characterized in that the circuits ~~(194)~~ for controlling the axial and radial magnetic bearings ~~(103 and 101, 102)~~ include a plate ~~(208)~~ having a bottom face facing towards the wall of the enclosure ~~(110)~~ and carrying power components for powering the axial and radial magnetic bearings ~~(103 and 101, 102)~~, and a top face facing towards the inside of the enclosure ~~(110)~~ and carrying components for processing signals issued by the axial and radial detectors ~~(106 and 104, 105)~~.

8. (CURRENTLY AMENDED) A turbomolecular vacuum pump according to ~~any one of claims 1 to 7~~, characterized in that the circuits ~~(194)~~ for controlling the axial and radial magnetic bearings ~~(103 and 101, 102)~~ are placed in an aluminum housing.

9. (CURRENTLY AMENDED) A turbomolecular vacuum pump according to ~~any one of claims 1 to 8~~, characterized in that the circuits ~~(194)~~ for controlling the axial and radial magnetic bearings ~~(103 and 101, 102)~~ are mounted on a removable bottom plate ~~(202)~~ of the enclosure ~~(110)~~, inside the enclosure.

10. (CURRENTLY AMENDED) A turbomolecular vacuum pump according to claim 3 ~~or claim 9~~, characterized in that the bottom plate of the enclosure ~~(110)~~ is made of aluminum.

11. (CURRENTLY AMENDED) A turbomolecular vacuum pump according to ~~any one of claims 1 to 10~~, characterized in that it has two radial magnetic bearings ~~(101, 102)~~ disposed on either side of the electric motor ~~(107)~~.

12. (NEW) A turbomolecular vacuum pump according to claim 9, characterized in that the bottom plate of the enclosure is made of aluminum.